“Feline Lower Urinary Tract Disease” or FLUTD is the term describing the following group of clinical signs:

**Clinical Signs**
- bloody urine
- straining to urinate (can easily be mistaken for straining to defecate)
- urinating in unusual places
- urinary blockage (almost exclusively a male cat problem)
- licking the urinary opening (usually due to pain)

Central to treating a cat with FLUTD is determining which of many possible causes is present. It turns out that different diseases are common in different age groups of cats with this syndrome. Of cats with FLUTD that are around 4yrs old:

**Causes**
- 50% will not have a cause which can be determined despite extensive testing
- 20% will have bladder stones
- 20% will have a urethral blockage
- 1-5% will have a true infection
- 1-5% will have a urinary tract cancer
- 1-5% will have had trauma to the urinary tract (i.e. have been hit by a car etc.)
- 1-5% will have a combination of a bladder stone and an infection

Cats over age 10 years of age, the likely possibilities are different. In this older group:

**Causes**
- 50% will have true urinary tract infections
- 10% will have bladder stones
- 17% will have a combination of infection and bladder stone
- 7% will have urethral blockage
- 3% will have urinary tract cancer
- 5% will not have a cause that can be determined despite extensive testing.
- 66% of these older cats will be in some stage of kidney failure

**HOW CAN THESE POSSIBLE CAUSES BE SORTED OUT?**

**Diagnosis**

In younger cats, there is a 50% chance that testing will not yeild a definitive cause. Given this, testing beyond an examination, urinalysis and a culture plate, may not be recommended, unless the syndrome is recurrent.

In older cats, it is more important to look for a diagnosis. A blood panel, urinalysis and urine culture will detect the 50% of cats who have urinary tract infections and the 66% that are in kidney failure. Radiographs will pick up any bladder stones.
We will commonly divide cats with FTULD into three groups:

I. **GROUP ONE**: Young cats, either male or female, without current urinary obstruction. We know statistically that at least half of these cats will not have a definable cause for this syndrome, thus testing is often held to a minimum, especially on the first episode of the syndrome. For these cats, it is reasonable to proceed to treatment perhaps armed with only urinalysis results as a guide.

II. **GROUP TWO**: Cats of any age, either male or female, without current urinary obstruction who have had thorough medical work-ups and yet no cause for the syndrome has been found. No bladder stones are evident on radiographs. No bacterial growth has been revealed when the urine has been cultured. No bladder structural abnormalities have been found with ultrasound, contrast radiography or any other special imaging technique.

III. **GROUP THREE**: Cats recovering from a urinary blockage who need a protocol to prevent future urinary blockages.

It used to be thought that struvite crystals in the urinary bladder were the primary cause of this syndrome. Experts thought the crystals were irritating and led to increased mucus production in the urinary lining and that clumps of crystal and mucus caused obstruction in male cats. This belief led to mass reformulation of commercial cat foods in the 1980’s and 1990’s so that commercial cat foods no longer promote the alkaline urine associated with struvite formation. As a result, the incidence of FLUTD dropped dramatically.

But now that most cat foods have been reformulated, how should the finding of struvite crystals be interpreted? It's been shown that:

- FLUTD cats have struvite crystals in their urine as often as normal cats do.
- About half of cats with FLUTD have no crystals in their urine whatsoever.
- Struvite crystals are a major portion of urethral plugs from blocked cats.

### Treatment

The current feeling is that steps should be taken to reduce or eliminate struvite crystals in an FLUTD cat’s urine, at least in the male cat. It appears that the resolution of the crystals in a cat with an FLUTD episode corresponds to the resolution of the episode, thus while the true significance of the crystals remains unclear, the general feeling is that steps should be taken to eliminate them. It is crucial to realize though that diet may not be a significant cause of these crystals in a cat eating a reputable brand of commercial cat food, other prevention methods should be employed.

1) **INCREASE WATER CONSUMPTION**: Research has shown that cats who eat primarily canned food have a reduced incidence of blocking. Water consumption may be further increased by periodically refilling the water bowl, thus calling the cat’s attention to the water bowl. Adding broth to the food may also help. Feeding in meals rather than leaving food out all the time, also helps maintain an acid pH as every time food is ingested, an alkaline tide hits the bladder. Sticking to one food rather than changing flavors or brands has also been found to be helpful.
2) REDUCE STRESS: Stress is felt to be a significant cause of this syndrome. Cats frequently break with this syndrome after a move or the addition of another cat. A stressed cat will alter its respiratory pattern in such a way that will alter blood pH and thus urinary pH. Anti-anxiety medication such as amitriptylline has been advocated and found successful for cats with recurrent FLUTD. It is hard to determine how amitriptyline might be working, since it also has anti-inflammatory properties, but its use has helped many cases.

3) ANTI-SPASMODICS AND TRANQUILIZERS: During the recovery period after an episode of blockage these medications are commonly used. They help the painful urethral spasms that occur with the inflammation associated with the episode. They also help the urethra dilate so that urine can pass.

4) ANTIBIOTICS: While true infection is not typically involved in younger cats with FLUTD, antibiotics are still commonly prescribed. In older cats, infection is a common cause of FLUTD if a urinary catheter has been placed. Antibiotics may help prevent new infections.

5) URINE ACIDIFIERS: These are not used as commonly as in the past since foods have been reformulated. The idea behind them is to assist in the dissolution of struvite crystals. They are still prescribed in some cases, but the approach is somewhat controversial given that most diets have been acidified already.

6) PREDNISONE/STEROID ANTI-INFLAMMATORIES: These medications may help with the swelling and pain but they can also promote infections in catheterized patients. These medications are probably not best used in patients who have received urinary catheters. Research suggests that they do not alter the course of the episode; however, many feel they help with the pain.

7) ELMIRON/ADEQUAN: These medications increase mucous lubrication in the bladder. These drugs were first developed to increase lubrication within arthritic joints. One theory of this disease is that the mucus lining of the bladder becomes disrupted in some cats, leading to an inflammatory reaction within the bladder wall and the consequences are the FLUTD syndrome. These medications may restore the mucus lining.

A diagnosis is not usually found for most cats with FLUTD. When a diagnosis is not found, we must use treatment plans that have worked in the past and are consistent with current disease theory. This approach is called “Empirical Therapy” and does not always work. As newer information is revealed, treatment protocols will be revised. FLUTD is an especially dynamic area of research today and new information and improved therapy can certainly be expected in the next few years.